

Claims

- 1) A manually operated liquid dispenser comprising:
 - a dispenser housing containing a pump chamber, the pump chamber having a center axis;
- 5 a liquid discharge passage communicating with the pump chamber; and,
 - a liquid discharge orifice communicating with the liquid discharge passage, the liquid discharge orifice having a center axis that is parallel with the pump chamber center axis.
- 10 2) The liquid dispenser of Claim 1, further comprising:
 - the liquid discharge orifice center axis being coaxial with the pump chamber center axis.
- 3) The liquid dispenser of Claim 1, further comprising:
 - the liquid discharge passage having a center axis that is coaxial with the pump chamber center axis and the liquid discharge orifice center axis.
- 15 4) The liquid dispenser of Claim 1, further comprising:
 - a pump plunger mounted on the dispenser housing for reciprocating movement of the pump plunger relative to the dispenser housing along a straight line that is parallel with the pump chamber center axis.
- 20 5) The liquid dispenser of Claim 4, further comprising:
 - the liquid discharge passage extending through the pump plunger and the liquid discharge orifice being on the pump plunger.

- 6) The liquid dispenser of Claim 4, further comprising:
 - the pump plunger having a finger engagement surface positioned to be engaged by a user's hand when gripping the liquid dispenser to manually reciprocate the pump plunger relative to the dispenser housing.
- 5 7) The liquid dispenser of Claim 6 further comprising:
 - the liquid discharge orifice being on the finger engagement surface.
- 8) The liquid dispenser of Claim 6, further comprising:
 - a nozzle mounted on the finger engagement surface and the liquid discharge orifice being on the nozzle.
- 10 9) The liquid dispenser of Claim 6, further comprising:
 - a hand engagement surface on the dispenser housing on an opposite side of the liquid dispenser from the finger engagement surface, the hand engagement surface being positioned on the dispenser housing to engage between a user's thumb and forefinger when the user is gripping the liquid dispenser.
- 15 10) A manually operated liquid dispenser comprising:
 - a dispenser housing containing a pump chamber, the pump chamber having a center axis;
 - a liquid supply passage in the dispenser housing communicating with the pump chamber, the liquid supply passage having a center axis that is oriented at an angle relative to the pump chamber center axis;
 - a pump plunger mounted on the dispenser housing for reciprocating movement of the pump plunger along a line of movement that is oriented at an angle relative to the liquid supply passage center axis, the pump plunger

containing a liquid discharge passage that communicates with the pump chamber; and,

a liquid discharge orifice on the pump plunger, the liquid discharge orifice communicating with the liquid discharge passage.

- 5 11) The liquid dispenser of Claim 10, further comprising:
 - the pump plunger having a finger engagement surface positioned on the pump plunger to be engaged by a user's hand holding the liquid dispenser to manually reciprocate the pump plunger relative to the dispenser housing; and,
 - 10 a nozzle projecting outwardly from the finger engagement surface, the liquid discharge orifice being on the nozzle.
 - 12) The liquid dispenser of Claim 11, further comprising:
 - the dispenser housing having a hand engagement surface on an opposite side of the liquid dispenser from the pump plunger finger engagement surface, the hand engagement surface being positioned on the dispenser housing to be held between a user's thumb and forefinger when gripping the liquid dispenser.
 - 13) The liquid dispenser of Claim 10, further comprising:
 - the pump plunger line of movement being coaxial with the pump chamber center axis.
 - 14) The liquid dispenser of Claim 10, further comprising:
 - the pump plunger line of movement being a straight line.
 - 15) The liquid dispenser of Claim 10, further comprising:

a resilient bulb connected to the pump chamber and the liquid discharge passage, the bulb having a resilience that urges the pump plunger away from the pump chamber.

16) The liquid dispenser of Claim 15, further comprising:

5 an input tube valve and an output tube valve integrally formed with the bulb.

17) The liquid dispenser of Claim 16, further comprising:

a vent valve integrally formed with the bulb.

18) A manually operated liquid dispenser comprising:

10 a dispenser housing containing a pump chamber, the pump chamber having a center axis;

a pump plunger mounted on the dispenser housing for reciprocating movement of the pump plunger relative to the dispenser housing along a straight line of movement that is parallel with the pump chamber center axis, 15 the pump plunger having a finger engagement surface that is positioned on the pump plunger where the finger engagement surface will be engaged by a user's fingers when holding the liquid dispenser to manually reciprocate the pump plunger relative to the dispenser housing; and,

20 a hand engagement surface on the dispenser housing on an opposite side of the liquid dispenser from the finger engagement surface on the pump plunger, the hand engagement surface being positioned on the dispenser housing where the hand engagement surface will be engaged between a user's thumb and forefinger when holding the liquid dispenser to manually reciprocate the pump plunger relative to the dispenser housing.

- 19) The liquid dispenser of Claim 18, further comprising:
 - a liquid discharge orifice on the pump plunger, the liquid discharge orifice communicating with the pump chamber.
- 20) The liquid dispenser of Claim 19, further comprising:
 - 5 a liquid discharge passage on the pump plunger, the liquid discharge passage communicating the liquid discharge orifice and the pump chamber.
- 21) The liquid dispenser of Claim 20, further comprising:
 - a bulb mounted to the pump chamber and the liquid discharge passage, the bulb having a resilience that urges the pump plunger away from
 - 10 the pump chamber.
- 22) The liquid dispenser of Claim 21, further comprising:
 - the bulb having an input valve and an output valve integrally formed on the bulb.
- 23) The liquid dispenser of Claim 18, further comprising:
 - 15 the pump plunger being mounted on the dispenser housing for telescoping movement of the pump plunger relative to the dispenser housing.
- 24) The liquid dispenser of Claim 18, further comprising:
 - a nozzle mounted on the pump plunger and projecting outwardly from
 - the finger engagement surface, the liquid discharge orifice being on the
 - 20 nozzle.
- 25) The liquid dispenser of Claim 18, further comprising:
 - the dispenser housing having a liquid supply passage that
 - communicates with the pump chamber, the liquid supply passage having a

center axis that is oriented at an angle relative to the line of movement of the pump plunger.